I. Amendments to the Specification

Please replace paragraph [0020], [0024], [0025], [0027], [0028], [0029], and [0031] with the following amended paragraph:

[0020] The position of the sensor element 38 facilitates the sensing system 35 in discriminating among impact events. For example, the outer skin 42 of a vehicle door 24 is frequently exposed to impact events not warranting deployment of a passive restraint. A slight indentation to ~~either of these structural elements~~ this structural element does not warrant deployment. Therefore, positioning the sensor element 38 on the surface of this structural element~~s~~ may lead to unnecessary deployment. Positioning the sensor element 38 sufficiently underneath the outer skin 42 of the structural element while ensuring its participation in significant impact events eliminates such unnecessary deployments.

[0024] In this embodiment, the bend sensitive resistance element 50 is comprised of a plurality of rectangular ink strips 52 composed of a conductive ink which has been treated to produce cracks in the ink, a flexible substrate 54, and electrical connectors 56 for connecting the conductive ink strips 52 and the restraints control module 36. As shown in Figure 4, the conductive ink is arranged into the strips 52 each in independent electrical communication with the restraints control module 36. In this embodiment, ink strips 52 are disposed horizontally relative to each other, i.e., end-to-end, along a unitary flexible substrate 54. In this embodiment, the ink strips are preferably about ¼" in height by approximately 4" in length. Flexible substrate 54 is preferably about 1" in height and has a length approximately equal to the structural element being monitored. An appropriate number of ink strips 52 necessary to span the length of the flexible substrate 54 is disposed on the flexible substrate 54. It has been determined that, for a typical front vehicle door 24, seven ink strips 52 of the preferable dimensions, laid end-to-end on the flexible substrate 54 provide adequate coverage of the span.

[0025] Arranged in this manner, the ink strips 52 are termed as individual bend sensitive resistance elements 50, providing a degree of azimuthal resolution. For example, when an impact event occurs near the latch of the door 24, causing deformation only in that area, the element 50 or strip~~s~~ 52 located in that area will deform, and therefore it will be the only element 50 that relays a deformation signal

representative of the deformation to the strips 52. This localization of the impact will allow the restraints control module 36 in implementing one method of the present invention (described below) to better discriminate among severe and non-severe impact events. Furthermore, this arrangement of a plurality of bend sensitive resistance elements 50 facilitates one method of the present invention in providing an improved ability to resolve the location and width of an impact event relative to the vehicle 10.

[0027] As mentioned above, the conductive ink of the ink strip has been treated to produce cracks in the ink. Such cracks are small, interspersed fissures in the ink strip 52 of the bend sensitive resistance element 50. The cracks are randomly spaced and oriented throughout the ink strip 52. The cracks are disposed along a single side of the strip 52, making the bend sensitive resistance element 50 sensitive in only one direction. When used to monitor for the occurrence of side impact events in a vehicle door, the surface having the cracks is typically directed toward compartment ~~26~~ 16 of the vehicle 10. As the bend sensitive resistance element 50 is bent inward, such as when a side impact occurs, the cracks open and increase the resistance of the element 50. This change in resistance can be detected by the restraints control module 36, which continually monitors resistance signals or output of the element 50, e.g., sensor or resistance values.

[0028] In addition to bend sensitive resistance elements 50, the sensor element 38 may be any other type of sensor element 38 having a plurality of sensor portions capable of being disposed in a manner that allows direct physical involvement in an impact event, and gathering and relaying information regarding the impact event. No matter the type of deformation sensor utilized, the sensor element 38 can be a plurality of elongate sensor ~~element~~ portions 38 horizontally situated so as to be capable of providing azimuthal resolution of impact events.

[0029] Figures 5a and 5b illustrate one method 110 of actuating a deployment of a vehicle restraint system during an impact event of the vehicle in accordance with the present invention. In this embodiment, method 110 is configured in the control module; however, method 110 may be configured in any other suitable module without falling beyond the scope or spirit of the present invention. Method 110 allows the control module (mentioned above) to receive and detect sensor signals having resistance values from the vehicle impact sensor (mentioned above) and to

distinguish between severe and non-severe events based on the width of an impact and the deformation of the vehicle. This is generally accomplished by receiving sensor signals during an impact event, manipulating the resistance values of the sensor signals, and comparing the manipulated values with threshold values. Method 110 provides the vehicle impact sensor including a sensor element having a plurality of strips, wherein each strip is adapted to generate an impact sensor signal having a sensor signal value representing a level of impact in box 112. As mentioned above, the impact sensor signals from the ~~impactor~~ impact deformation sensor have a characteristic indicative of the impact event or the deformation of the vehicle. In this embodiment, a change or increase in resistance is detected by the control module 36. During an impact event, e.g., an impact at a vehicle side door at which the plurality of sensor strips are disposed, each sensor strip generates a sensor or resistance value representative of a level of impact onto a respective portion of the door. In this embodiment, each strip being deformed by the impact event bends (as mentioned above) providing the sensor or resistance value representative of the level of impact. During the impact event, the impact sensor signals are received by the control module in box 114 from each sensor strip.

[0031] The control module then sums the sensor signal values of the low-pass filtered sensors signals to define an aggregate sensor signal value in box 116 which is compared to a threshold aggregate sensor signal value (described below). Thus, the aggregate sensor signal value may be a summation of the resistance values of low-pass filtered sensor signals generated by the sensor strips during the impact event. As shown in Figure 7, the resistance values of the sensor signals having resistance values received by the control module are summed and plotted over time to illustrate a chronological aggregate value H of the sensor signals. This also depicts a continuous change and increase in aggregate resistance during an impact event. During the impact event, the aggregate value is shown to increase over a duration of time. As shown, a greater change or increase in aggregate resistance indicates a greater level of impact to the strips or deformation to the vehicle. However, it is understood that Figure 7 is provided for illustration purposes only and that the method of the present invention is not necessarily time dependent. Then, the aggregate sensor signal value is conditioned by a high-pass filter in box 117 to

further eliminate low frequency components that are not useful in discriminating the impact event.